



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
|-----------------|-------------|----------------------|---------------------|------------------|

10/671,353

09/25/2003

Divya Vijayaraghavan

03-1844

7117

24319

7590

01/23/2009

LSI CORPORATION
1621 BARBER LANE
MS: D-105
MILPITAS, CA 95035

EXAMINER

MOUTAOUAKIL, MOUNIR

ART UNIT

PAPER NUMBER

2419

MAIL DATE

DELIVERY MODE

01/23/2009

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

| | | | |
|------------------------------|--------------------------------------|--|--|
| Office Action Summary | Application No. 10/671,353 | Applicant(s) VIJAYARAGHAVAN ET AL. | |
| | Examiner MOUNIR MOUTAOUKIL | Art Unit 2419 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 27 October 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,3-7,9-14 and 26-37 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1, 3-7, 9-14, and 26-37 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Amendment

The amendment filed 10-27-2008 has been entered and considered.

Claims 2, 8 and 15-25 are cancelled.

Claims 1, 3-7, 9-14, and 26-37 remain rejected as discussed below.

Claim Rejections - 35 USC § 101

1. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claim(s) 1, 3-7 and 9-14 is/are rejected under 35 U.S.C. 101 as not falling within one of the four statutory categories of invention. While the claims recite a series of steps or acts to be performed, a statutory "process" under 35 U.S.C. 101 must (1) be tied to another statutory category (such as a particular apparatus), or (2) transform underlying subject matter (such as an article or material) to a different state or thing. The instant claims neither transform underlying subject matter nor positively tie to another statutory category that accomplishes the claimed method steps, and therefore do not qualify as a statutory process. The claims do not qualify as statutory process because they are directed to an abstract idea and recite purely mental steps.

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and

the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1, 3-7, and 9-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sriram (US 5,463,620) in view of Polan et al (US 2003/0172123) further in view of the background of APA (Admitted Prior ART) and further in view of Chen (US 5970088), hereinafter referred to as Polan.

Regarding claims 1 and 9. Sriram discloses a method for prioritizing frames for transmission from a local node according to frame type. The method comprises determining if a remote node is open (column 2, lines 60-67. fig 1. the nodes are interconnected). If the remote node is open (Node 14 is open), then determining if there are contexts for the remote node in which the contexts are arranged in at least first and second queues (fig 5. the data is transmitted to node 14 through the link 28. the contexts are arranged in multiple queues. first queue 32, second queue 44); if no contexts reside on the queues for the remote node (column 6, lines 20-44. server 48 empties the queues from content), then examining an on-chip context cache to determine a context for the remote node (column 6, lines 20-44. the server check the next queue for context for the node 14) when the remote node is a current node of a current loop (fig 1. the nodes are interconnected), thereby promoting saving of current loop tenancy (fig.1, current loop does not end the tenancy).

Sriram does not specify that the remote node is a device on a fiber channel or the method is performed by another device on fiber channel. However, Polan discloses a method of implementing ATM over Fiber channel (see paragraph 0034). Thus, it

would have been obvious to a person of ordinary skill in the art at the time of the invention to use ATM over fiber channel, as taught by Polan, into the loop (fig 1, 10, 14, 16) of Sriram for the purpose of taking advantage of the higher bandwidth provided by the fiber channel.

Sriram does not explicitly disclose an on chip context cache. However, the APA of the current application discloses that it is well known in the art to the context manager is responsible for retrieving on-chip context for the purpose of communicating information with other modules in the loop. Thus, it would have been obvious to a person of ordinary skill in the art at the time of the invention to examine on-chip context, a

s taught by the APA (see paragraph [0002]) for the reason listed above.

Sriram in view of Polan discloses all the limitations of the claimed invention with the exception that a queue is both a response queue and transfer queue. However, Chen, from a similar field of endeavor, discloses that buffer can be both a transfer/receive buffer. Thus, it would have been obvious to a person of ordinary skill in the art at the time of the invention to employ a transfer/receive buffer (fig.2a, buffers within the line card), as taught by Chen into the system of Sriram in view of Polan for the purpose of reducing hardware within the system.

Regarding claim 3. Sriram discloses a method that further comprises if there are contexts in the on-chip context cache for the remote node, then retrieving and queuing

cached context for the remote node (see column 6, lines 20-44. the server transmits any context located within the next queue to the node 14).

Regarding claim 4. Sriram discloses a method that determines if there is context on the data queue for the remote node (see column 6, lines 20-44. The server locates context availability within each queue including the data queue).

Regarding claim 5, the method of Sriram comprises that if there is context on the data queue for the remote node, then prioritizing context on the data queue for the lowest direct memory access latency for the remote node (column 8, lines 39-49, low bandwidth is allocated for low priority queue. 15 cells per cycle).

Regarding claims 6 and 7. Sriram discloses a method of prioritizing an earliest queued context for the remote node with the highest weight (fig 5, column 6 lines 20-44. The server defines time cycles for each queue. T1 is the first cycle granted for queue 32 because voice has more weight then data. 30 cells per cycle).

Regarding claim 10. Sriram discloses a method wherein the contexts are arranged in a third queue (fig.5 queue 36).

Regarding claim 11. Sriram discloses a method wherein each of the first second third queues stores a unique type of frame (fig.5).

Regarding claim 12. Sriram discloses a method wherein the contexts are arranged in fourth and fifth queues (fig.5).

Regarding claims 13 and 14. Sriram discloses a method where five different queues with assigned priority (fig.5).

3. Claims 26-37 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mullendore et al (US 7,215,680) in view of Sriram and further in view of the background of APA (Admitted Prior ART) and further in view of Chen. Hereinafter referred to as Mullendore.

Regarding claim 26. The prior art of Mullendore discloses a plurality of nodes (fig.1A), each of the plurality of nodes communicatively coupled to all other nodes of the plurality of nodes in a loop topology (fig.1A), each of the plurality of nodes capable of receiving information from every other node of the plurality of nodes and capable of transmitting information to every other node of the plurality of nodes per loop (fig.1A), such that no two nodes transmit to a same node in a loop (fig.1A) and a remote node is a current node of a current loop (fig 1A), thereby promoting saving of current loop tenancy (fig.1A, current loop does not end the tenancy).

Mullendore does not disclose that the communications between nodes uses multiple queues to determine priority for transmitting frames of information. However, Sriram discloses a method where the communication between nodes uses multiple queues to determine priority for transmitting frames of information (fig 1 and 5); wherein the queues are examined for context when no context reside on other queues. Thus, it would have been obvious to a person of ordinary skill in the art at the time of the invention to implement nodes that employ multiple queues to determine priority for transmitting frames of information, as taught by Sriram, into the loop topology of Mullendore for the purpose of enhancing data flow, priority and avoiding congestion.

Mullendore in view of Sriram does not explicitly disclose an on chip context cache. However, the APA of the current application discloses that it is well known in the art to the context manager is responsible for retrieving on-chip context cache for the purpose of communicating information with other modules in the loop. Thus, it would have been obvious to a person of ordinary skill in the art at the time of the invention to examine on-chip context, as taught by the APA (see paragraph [0002]) for the reason listed above.

Mullendore in view of Sriram discloses all the limitations of the claimed invention with the exception that a queue is both a response queue and transfer queue. However, Chen, from a similar field of endeavor, discloses that buffer can be both a transfer/receive buffer. Thus, it would have been obvious to a person of ordinary skill in the art at the time of the invention to employ a transfer/receive buffer (fig.2a, buffers within the line card), as taught by Chen, into the system of Mullendore in view of Sriram for the purpose of reducing hardware within the system.

Regarding claims 27, Mullendore discloses a system of communication wherein the loop topology is a fiber channel arbitrated loop (see background of Mullendore, paragraph [003]).

Regarding claims 28-33. Mullendore discloses all the limitations of the parent claim with the exception of wherein the queues are multiple queues for multiple sets of frames. However, Sriram discloses a queuing method where the node queues multiple incoming frames within different queues. Each set of frames is queued in a separate queue. Thus, it would have been obvious to a person of ordinary skill in the art at the

time of the invention to implement the method of using multiple queues for multiple sets of frames, as taught by Sriram, into the communication system of Mullendore for the purpose of allocating different bandwidths for different sets of frames depending on priority and enhancing data transmission.

Regarding claim 34. Mullendore discloses a system wherein the plurality of nodes are two to 126 in number (fig.1A).

Regarding claim 35. Mullendore and Sriram discloses all the limitations of the parent claim with the exception of wherein the plurality of nodes are in a dual loop arrangement such that each node receives and transmits information to each of two nodes through two loops in which information flows in opposite directions. However, examiner takes official notice that it is well known in the art how to convert a half duplex loop or ring to a full duplex loop. Thus, it would have been obvious to a person of ordinary skill in the art at the time of the invention was made to convert a half duplex loop to a full duplex loop for the purpose of increasing efficiency and avoiding latency.

Regarding claim 36. Mullendore discloses a system wherein a node corresponds to one device (fig.1A, 710).

Regarding claim 37. Mullendore discloses a system wherein a node corresponds to a plurality of devices (fig1A, 710 and 700).

Response to Arguments

Applicant's arguments with respect to claims 1, 3-7, 9-14, and 26-37 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

4. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. See PTO_892.

Examiner has cited particular columns and line numbers in the references applied to the claims above for the convenience of the applicant. Although the specified citations are representative of the teachings of the art and are applied to specific limitations within the individual claim, other passages and figures may apply as well. It is respectfully requested from the applicant in preparing responses, to fully consider the references in entirety as potentially teaching all or part of the claimed invention, as well as the context of the passage as taught by the prior art or disclosed by the Examiner.

In the case of amending the claimed invention, Applicant is respectfully requested to indicate the portion(s) of the specification which dictate(s) the structure relied on for proper interpretation and also to verify and ascertain the metes and bounds of the claimed invention.

When responding to this office action, applicants are advised to clearly point out the patentable novelty which they think the claims present in view of the state of the art disclosed by the references cited or the objections made. Applicants must also show how the amendments avoid such references or objections. See 37C.F.R 1.111(c). In addition, applicants are advised to provide the examiner with the line numbers and pages numbers in the application and/or references cited to assist examiner in locating the appropriate paragraphs.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to MOUNIR MOUTAOUAKIL whose telephone number is (571)270-1416. The examiner can normally be reached on Monday-Thursday (1pm-4:30pm) eastern time.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hassan Kizou can be reached on 571-272-3088. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/M. M./
Examiner, Art Unit 2419

/Hassan Kizou/
Supervisory Patent Examiner, Art Unit 2419